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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,688	12/09/2003	Haifeng Wang	944-005.024	3274

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EXAMINER

BOAKYE, ALEXANDER O

ART UNIT PAPER NUMBER

2667

DATE MAILED: 10/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/731,688	Applicant(s) WANG ET AL.	
	Examiner ALEXANDER BOAKYE	Art Unit 2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20-22 is/are allowed.
- 6) ☒ Claim(s) 1,17-19,23,24 and 26 is/are rejected.
- 7) ☒ Claim(s) 2-16 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Kaiser (US Patent # 6,188,717).

Regarding claim 1, Kaiser teaches a method of code division multiple access communications wherein a plurality of data streams in symbol-level for carrying a plurality of transmit symbols are combined in a summing process into at least one chip level code stream for transmission (column 5, lines 34-46; see Fig. 4), the method comprising: adding a plurality of prefixes to the data streams in symbol-level for providing a plurality of further data streams indicative of the prefix-added streams (column 6, lines 45-50; multi-carriers modulated data symbols are extended by a cyclic prefix on the transmission side and summed up by the adder block 17 of Fig. 4; the claimed prefixes correspond to guard intervals as evidenced by Kaiser) ; and spread filtering the further data streams in a plurality of code channels prior to the summing process (column 6, lines 45-50; column 7, lines 13-16).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17, 18, 19, 23, 24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larsson (US Patent # 6,842,487) in view of Kaiser et al. (US Patent # 6,188,717).

Regarding claim 17, Larsson teaches a plurality of first modules, for adding a plurality of prefixes to the data streams in symbol-level for providing a plurality of further data streams indicative of the prefix-added data streams (column 7, lines 7-11; see Fig. 9); a plurality of second modules, responsive to the further streams, for filtering the prefix-added data streams by a plurality of code signals prior to the summing process (column 7, lines 7-21; column 8, lines 44-52; see Fig. 9 and 1230 of Fig. 12). The claimed chip-level code stream is inherent in orthogonal frequency division multiplexing as evidenced by Larson (column 6, lines 39-41). Larsson differs from the claimed invention in that Larsson does not teach spreading. However, Kaiser discloses spreading (column 6, lines 45-50; column 7, lines 13-16). One of ordinary skill in the art would have been motivated to incorporate spreading into the communication system in order to increase data rate. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate spreading such as the one taught by Kaiser into the communication system of Larsson with the motivation

being that it provides capability for the system to increase data rate, thus enhancing efficiency.

Regarding claim 18, Larson teaches that each of the data streams carries one of the plurality of transmit symbols the transmitter further comprising a plurality of third modules, for dividing each of the data streams into a plurality of data blocks so as to allow the first modules to add the prefixes to the to the data blocks to the summing process (column 7, lines 7-15; see Fig. 9).

Regarding claim 19, Larsson teaches a plurality of fourth modules for combining the plurality of prefix-added data blocks into each of the prefix-added data streams to the spread filtering (column 8, lines 3-9; column 8, lines 44-52).

Regarding claims 23 and 24, Larsson teaches a transmitter (Fig. 9) comprising: a plurality of first modules for adding a plurality of prefixes to the data streams in symbol-level for providing a plurality of further data streams indicative of the prefix-added data streams (column 7, lines 7-11; see Fig. 9), and a plurality of second modules, responsive to the further data streams, for filtering the prefix-added data streams by a plurality of code signal prior to the summing process (column 7, lines 7-21; column 8, lines 44-52; see Fig. 9 and 1230 of Fig. 12); and a receiver (Fig. 9b) comprising: a third module for removing the prefixes from the chip-level code stream for providing a prefix-removed code stream in the time domain (column 8, lines 2-9; the claimed chip-level code stream is inherent in the orthogonal frequency division multiplexing as evidenced by Larsson), and a fourth module, for converting the prefix-

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removed code stream into a transformed signal in frequency domain(column 8, lines 8-10).

Larsson differs from the claimed invention in that Larsson does not teach spreading. However, Kaiser discloses spreading (column 6, lines 45-50; column 7, lines 13-16). One of ordinary skill in the art would have been motivated to incorporate spreading into the communication system in order to increase data rate. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate spreading such as the one taught by Kaiser into the communication system of Larsson with the motivation being that it provides capability for the system to increase data rate, thus enhancing efficiency.

Regarding claim 26, the claimed mobile terminal corresponds to Transmitter, Fig. 9a of Larsson.

Allowable Subject Matter

3. Claims 2,3-16, 25, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 20-22 are allowable.

Claims 20-22, the prior art of record does not teach a third module for applying a plurality of feed-forward filter coefficients to the transformed signal for channel equalization in frequency domain and providing equalized signal for despreading.

Response to Arguments

4. Applicant's arguments filed 7/11/2005 have been fully considered but they are not persuasive.

A) At page 2, in claims 1 and 2 applicant argued that Kaiser discloses adding the cyclic prefix in chip level, in contrast, claim 1 has the limitation that the prefixes are added to the data stream in the symbol level.

B) In response, the examiner maintains that Kaiser teaches that the prefixes are added to the data stream in the symbol level (column 6, 45-50 ; the claimed symbol level corresponds to data symbols $k, k+1, \dots, k+L$).

C) At page 2, in claims 17, 18, 19, 24, and 26 applicant argued that Kaiser does not disclose spreading in a multicarrier system.

D) In response, Examiner maintains that Kaiser teaches spreading because as shown in Fig. 4, the data symbols $k, k+1, \dots, k+L$ are spread filtered by device 10 and summed in the symbol and chip synchronous adder 11.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Boakye whose telephone number is (571) 272-3183. The examiner can normally be reached on M-F from 8:30am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham, can be reached on (571) 272-3179. The fax number is (571) 273-8300. Any inquiry of general nature or relating to the status of this application or proceeding should be directed to Electronic Business Center numbers 866-217-9197 and 703-305-3028.

Alexander Boakye

Patent Examiner

AB

9/30/05



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TECHNOLOGY CENTER 2667

10/3/05